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| **Subject / Course:** Mathematics | **TC Name:** Michelle King | |
| **Grade Level:** 8 | **Date:** October 25, 2010 | |
| **Topic:** Histograms | **Time of Class:** 2:25-3:25 | |
| **AT Name:** Lindsay Hilderley | **Room # / Location:** 207 | |
| **1. Curriculum Expectation(s) and Goal(s) for the Lesson** | |  |
| 1. **Expectations**:  |  | | --- | | * Collect and organize categorical, discrete, or continuous primary data and secondary data, and display the data in charts, tables and graphs, that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools * Demonstrate an understanding of the appropriate uses of bar graphs and histograms by comparing their characteristics. | | | |
| 1. **Goal(s) for the lesson:**  |  | | --- | | * Students will analyze their surveys (primary data) by displaying the data in an appropriate graph * Students will be able to communicate the differences between bar graphs and histograms | | | |
| **2. Preassessment and Accommodations/Modifications** | | |
| |  |  | | --- | --- | | **Preassessment:** | **Accommodation/Modification:** | | **Academic Needs: Students who finish early**  **Academic Needs: Students who are unable to finish**  **Behavioural/Social/Emotional Needs: Students who misbehave** | * If students finish early, they are to do silent reading for the remainder of the period. * Due to the nature of the lesson, students should be able to finish the work in class. However, if students are unable to finish the work on histograms then they are to complete it for homework * Students with IEP’s for behavioural issues will be given warnings for inappropriate behaviour and will be given positive praise/feedback for appropriate behaviours. | | | |

**3. Learning Environment**

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| Students will be working at their seats for the duration of the class. Students are encouraged to discuss the topic as a class and with their elbow partner. When students are working on their group project, they are allowed to work together in a group; however, they need to remain on task. If students cannot handle working in a group then they will have to work individually at their own desks. |

**4. The Overview (Agenda) for your lesson:**

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| - How do we relate?  - Histograms  - Analysis of Surveys  -Homework  - Reflection |

**5. Resources and Materials for your class**

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| Teacher Materials   * Text book * Math dictionary * Class survey * Overhead * Overhead projector   Student Materials   * Graph paper * Writing utensils * Text book * Math dictionary * Class survey   Resources:  **Textbook:**  Zimmer, D. (2006). *Mathematics 8.* Toronto: Nelson.  **Pictures:** |

**6. Content, Teaching Strategies, for Lesson**

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| ***Time*** | ***Teaching or***  ***Assessment Strategy*** | ***Detailed Description*** |
| *5 min* | *Introduction* | *Look at the following images, how do they relate?*  *When we take pictures, we try to get a balanced or correctly exposed image. One way of determining if we have achieved this is by taking a look at the image’s histogram. Some digital cameras have a function which allows you to do just that. In a histogram for an image, there are 256 intervals or levels of brightness (0-255). Zero represents darkness or the colour black and one represents brightness or the colour white. The closer the histogram is to zero, the darker the image. If the image obtains a lot of pixels in the white range, the image may be too bright. A correctly exposed image is one in which the histogram is evenly distributed.* |
| *20 min* | *Instruction*  *Direct Instruction* | *Histograms*  *Today we are going to take a look at histograms, page 34 in your math dictionary.*  *A histogram is a graph with bars that show frequencies of data organized into intervals; the intervals line up side by side, without gaps on the number line.*  *The heights (in centimetres) of each of the students in Rishi’s class are recorded and are to be displayed in a graph.*  *If you were to use a bar graph, you would have to create a category for each of the students in the class. As a result the graph would be very large.*  *Another way of displaying the results is a histogram.*  *Steps for creating a histogram*   1. *Determine the range of the data (the difference between the highest and lowest value)* 2. *Determine the intervals for your data*  * *If you used multiples of 2 for the intervals ie. 143-145, 145-147, etc then you would have 13 intervals which is too many* * *If you used multiples of 10 for the intervals you would have 3 intervals which is too few.* * *If you used multiples of 5, gives you six intervals. which is ideal* * *To make it easier, you can adjust where you start your interval. Since our minimum height is 147, we can start our interval at 145cm which then makes it easier for multiples of 5.*  1. *Write your intervals in a frequency table and determine the frequency of each interval* 2. *Create the histogram*  * *Intervals should intersect, for example...145-150, 150-155 and not 145-150, 151-156* * *If you have under 50 data points, you should have between 5-7 intervals.* * *Answer any questions students may have* |
| *30 min* | *Application*  *Group Activity* | *Last class, we conducted a class survey which mainly focused on the use of technology of our class. We surveyed each of the 25 students who were present on Friday and determined our results for each question. Based on the attendance in Friday’s class only, does the survey that we conducted represent a census or a sample of our population? If our whole class was present, 29 students, however we still only surveyed 25 students, would the survey be a census or a sample of our population? Would our results be a representative sample of our class?*  *Today we are going to analyze our results.*  *For questions 1-4, I would like you to*   1. *State the question* 2. *Create a frequency table for the data* 3. *Create an appropriate graph for the results (Make sure that your graphs are accurately labelled)* 4. *Explain which graph you used and why* 5. *Summarize your results in words. Explain your graphs.*   *You will be working in groups of 4. Each person in the group will be responsible for analyzing one graph. When you are finished, create a simple title page. The title page should include*   1. *A title of the Survey (group created)* 2. *Names of all students in the group* 3. *The date*   *Before you hand in our assignment, check that*   1. *Titles are underlined* 2. *All questions have the required information.*   *Once finished, complete the following question* |
| *5 min* | *Consolidation*  *Reflection* | *On a piece of paper, answer the following question:*  *How is a histogram similar to and different from a bar graph? Use examples to support your answer.*  *Have the students hand it in before they leave.* |